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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/837,834      | 04/18/2001  | John A. Corey        | 107044-0007         | 9684             |

24267 7590 08/26/2003

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BOSTON, MA 02210

EXAMINER

CHANEY, CAROL DIANE

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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1745

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DATE MAILED: 08/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

09/837,834

Applicant(s)

COREY ET AL.

Examiner

Carol Chaney

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1,2,5-7,10-12,15,16,19,20 and 23 is/are rejected.
- 7) ☐ Claim(s) 3,4,8,9,13,14,17,18,21 and 22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

***Claim Rejections - 35 USC § 102***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 6, 7, 11, and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Bahar et al., US Patent RE 37656 E for reasons of record. The rejection is repeated below for convenience.

Bahar et al. disclose a composite layered structure comprising an expanded polytetrafluoroethylene (PTFE) membrane impregnated with an ion exchange material throughout the membrane. The ion exchange material substantially impregnates the membrane so as to render an interior volume of the membrane substantially occlusive, and thus impermeable to water and carbonaceous fuel. (column 2, lines 43-64.) In a preferred embodiment, NAFION is brushed onto both sides of a microporous PTFE membrane, thus providing an impervious layer of PTFE and NAFION, with protonically conductive membranes on both sides of the impervious layer. (Column 11, lines 38-53.) The micropores in the PTFE which are filled with ionically conducting NAFION are sites which allow protonically conductive contact between the outer NAFION layers.

***Claim Rejections - 35 USC § 103***

Claims 1, 2, 5, 10, 15, 16, 19, 20, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bahar et al. for reasons of record. The rejection is repeated below for convenience.

As discussed above, Bahar et al. disclose applicants' invention essentially as claimed, with the exception that Bahar et al. do not specifically disclose a direct oxidation fuel cell, or the catalytic and diffusion layers for such a fuel cell. Bahar et al. teach that the ion exchange materials of their inventive membrane may be include powders such as carbon black, graphite, nickel, silica, titanium dioxide, or platinum black, to provide catalytic effects. (Column 5, lines 2-11.) Therefore, catalyst layers as recited in applicants claims 1, 2, 5, 10, 15, 16, 19, 20, and 23 are disclosed by Bahar et al.

Bahar et al. teach the membrane of the present invention may be used for a fuel cells and the use of the membrane results in fuel cells with improved ionic conductance and water transport across the membrane, and require less fuel gas humidification. (Column 10, lines 58-65.) This teaching of the Bahar et al. invention generically in polymer-electrolyte fuel cells is considered to encompass teaching the use of the membrane in direct methanol fuel cells. Thus, applicants' invention as a whole would have been obvious to one of ordinary skill in the art based upon the teachings of Bahar et al.

***Allowable Subject Matter***

Claims 3,4,8,9,13,14,17,18,21 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, as discussed in the office action mailed 03 February 2003.

***Response to Arguments***

Applicant's arguments filed 03 June 2003 have been fully considered but they are not persuasive.

With regards to claims 6, 7, 11, and 12 applicant asserts Bahar et al. do not suggest a sandwich configuration in which protonically-conductive materials are placed over an internal barrier layer. However, the painted or coated ion exchange materials disclosed by Bahar, by virtue of being painted or coated, will have ion exchange material filling the pores of the expanded PTFE, and will also have ion exchange material coating the top and bottom surfaces of the expanded PTFE. The portions of the ion exchange material which coat the surfaces of the expanded PTFE are first and second proton conductive membranes. The expanded PTFE membrane filled with ion exchange material is the internal barrier layer. Applicant notes that Bahar discloses a membrane with uniform proton conductivity whereas the applicants recite "selected sites" of proton conductivity. Uniform conductivity is considered to anticipate "selected sites" of proton conductivity, since any site in a uniformly conductive membrane is a

Art Unit: 1745

selected site, and is protonically conductive. With regards to claim 12, an expanded PTFE layer is considered to be a microporous material.

With regards to claims 1, 2, 5, 10, 15, 16, 19, and 20, applicants assert Bahar does not disclose a membrane which is sandwich-type configuration in which the middle layer is not the ion exchange membranes. Although it is true that the middle layer of Bahar membrane is protonically conductive, applicants' claims to not limit the protonic conductivity of the claimed membrane. Thus, applicants' claims are anticipated by the Bahar reference.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol Chaney whose telephone number is (703) 305-3777. The examiner can normally be reached on Mon - Fri 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 703-308-2383. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Carol Chaney  
Primary Examiner  
Art Unit 1745

cc